Review of the Safety of Use of Silver Dressings for Burns in Children Under 4 Years of Age

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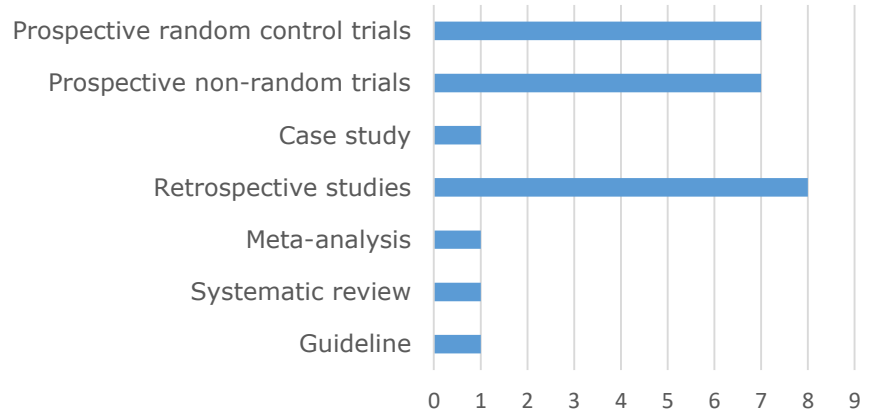
BACKGROUND: Silver (Ag) dressings are commonly used in management of paediatric burns. Concern exists over potential adverse events such as leukopenia, hepatotoxicity and renal impairment post application of silver dressings, in addition to silver deposition in internal organs in animal studies. Guidance for the use of Ag products on children under 4 is lacking. We review the literature to describe the safety of silver dressings in children under 4 years. (1,2,3)

METHODS: A search on Medline was performed with the subject headings ["child" OR "paediatric" OR "Neonate"] AND "burns" AND ["silver" or "mepilex Ag" or "acticoat" or "aquacel Ag" or "silver sulfadiazine"]. The inclusion criteria were: English, burns, paediatric population, use of silver dressings and reporting of wound outcomes.

RESULTS: **26/246 papers met criteria for review**



Paper characteristics:

- Wide range of TBSA% (1-40%) and all depths
- Range Ag dressings used: Aquacel Ag, Acticoat + SSD
- 2 explicitly reported use of Ag dressings on under 4 year olds
- 2 reported on neonates
- 1 on premature neonates
- 18 concluded positive outcomes with Ag dressings
- 3 reported better outcomes with membrane dressings
- 2 studies showed serum Ag levels correlated with burn size
- 6 studies reported silver-specific outcomes in children
- 4 studies concerned with the use of Ag all used SSD

CONCLUSION: This review highlights the absence of any firm evidence to deter practitioners from using Ag in the use in burns for under 4 year olds, including neonates, questions remain regarding long term safety of use in this population. When used over a large TBSA%, burn systemic effects should be monitored and the therapy altered if concerns arise. However, no papers demonstrated sufficient Ag associated adverse events to suggest cessation.

FUTURE SUGGESTED INVESTIGATIONS:

- Long term follow-up of a paediatric population previously treated with Ag products for burns is required to offer conclusions about Ag dressing safety.
- A comparative study of serum Ag during use of SSD vs Acticoat vs Aquacel ag vs Mepitel Ag may offer those who continue to have reservations about Ag use in paediatric pts a "lowest risk" option.

REFERENCES:

1. Silver Absorption on Burns After the Application of Acticoat. Wang et al; J burn care & res; 2009
2. A pharmacological and toxicological profile of silver as an antimicrobial agent in medical devices. Lansdown et al; Ad pharm sci; 2010
3. Silver and nanoparticles of silver in wound dressings .Wilkinson et al; J Wound Care;2011

Index
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